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For Immediate Release
Sept. 28, 2013

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State Forester Releases Yarnell Hill Accident Investigation Report

PHOENIX, Ariz. – The Arizona State Forester today released the Yarnell Hill Fire Serious Accident Investigation Report, which analyzes the circumstances leading to the June 30 entrapment and deaths of 19 firefighters of the Granite Mountain Interagency Hotshot Crew. The report and accompanying documents are available at <https://sites.google.com/site/yarnellreport/>.

The State of Arizona convened an accident investigation team July 3 to review the conditions and events leading to the tragedy. The investigation team visited the site of the accident, reviewed audio and video files, interviewed individuals associated with the incident, reviewed fire weather and behavior data, and examined available records and physical evidence. The resulting report contains the most complete information available about the accident.

“Our mission was to find out what happened and to discern the facts surrounding this tragedy to the best of our ability,” said Jim Karels, investigation team lead and the State Forester for the Florida Forest Service. “We also hope this report facilitates learning within the wildland fire community in order to reduce the likelihood of repeating actions that contributed to the loss of life.”

The 116-page report includes a fact-based narrative of the incident and offers the investigation team’s analysis, conclusions and recommendations. It also includes a discussion section that is meant to facilitate understanding and learning by exploring various perspectives and issues that arose during the investigation.

“Our number one concern right now is ensuring that the families have the information and support that they need as this report is released,” said Arizona State Forester Scott Hunt. “Beyond that, it is critical that the State of Arizona and the broader wildland fire community have the opportunity to thoroughly review the report so that we fully understand the events leading to the loss of the Granite Mountain hotshots.”

To coordinate a phone interview with a Serious Accident Investigation Team Member please call 707-602-7568.

Yarnell Hill Investigation Team Biographies

Jim Karels is the Florida State Forester and Director of the Florida Forest Service. He oversees all wildland fire protection on over 26 million acres in Florida; directs the largest prescribed fire program in the nation and; provides leadership and guidance on forest lands in Florida including 35 state forests comprising over 1.1 million acres. Jim is a native of Minnesota, a graduate of the University of Minnesota. He has over 30 years of experience in land management and wildfire suppression and has served with the U.S. Forest Service as well as the Florida Forest Service. He was appointed to his current position as State Forester in May 2008. Jim represents all 50 states as the National Association of State Foresters Wildfire Committee Chairman and sits on the Wildland Fire Leadership Council providing support for the implementation and coordination of national fire management policies. He is a member of the Governor's Land Acquisition and Restoration Council; and sits on numerous national boards and associations dealing with wildland fire suppression and forest land management. He oversees the statewide emergency disaster response for the Department of Agriculture and Consumer Services and is an integral member of the Florida Disaster Response Team.

Mike Dudley has served as the Director of State and Private Forestry for the Intermountain and Northern Regions of the US Forest Service since 2009. In 1977, he began his Forest Service career as a seasonal firefighter in California. His first permanent positions were on the Inyo and the Willamette National Forests, where he worked in various fire/fuel positions including District Fire Management Officer. From 1997 to 2001, he held numerous positions in the National Office's aviation and planning staffs, including that of Assistant Director of Fire Ecology (Hazardous Fuels). Mike transferred to the Intermountain Regional Office to serve as Director of Fire, Aviation, Air Management from 2001 to 2009. He is a steering committee member and instructor for S-520, Advanced Incident Management and S-620, Area Command at the National Advanced Fire and Resource Institute. He has been a long-term member of incident management teams and currently is a member of Area Command Team 2. Mike earned a B.S. in Forest Management from Oregon State University in 1986 and attended the Federal Executive Institute (FEI) in 2005.

Godot Apuzzo is an equipment specialist for the Fire and Aviation Program at the US Forest Service Missoula Technology and Development Center. He has worked for the Forest Service since 1992 as a forestry technician for forest inventory, silviculture, and wildland firefighting. He was on an Interagency Hotshot Crew for three years and spent 12 years as a smokejumper and squad leader. Godot has an associate in applied science degree in forest technology from New York State Ranger School and a B.S. in forestry from the University of Montana.

Lance Carbone is the Division Chief of Logistics for the Boise Fire Department and started his career in 1989 on El Cariso Hotshots in southern California working toward a structural firefighter position. He worked as a city firefighter for two years prior to returning to the United States Forest Service. He has 22 fire seasons as a Federal wildland firefighter with 14 of those being on the Boise NF and has held various positions in fire management including Zone FMO and AFMO with both the USFS and BLM. Currently, Lance is Incident Commander Type 3, Operations Section Chief 2, Operations Branch Director along with being a Planning Section Chief 1 on a Great Basin National Incident Management Team.

Randy Draeger is the Regional Safety and Health Director for the Intermountain Region of the US Forest Service. Randy is also a national lead investigator for agency-level reviews for the last eleven years. He attended the University of Phoenix where he received a BS in Business Management. Before joining the Forest Service, he did a tour of duty with the Marine Corps and worked several years in safety management in private industry. In July 2004, Randy moved from the Tahoe and Eldorado National Forests to his current position in Ogden, Utah.

Tim Foley is the Fire Behavior Analyst on the Rocky Mountain Area Type 1 Incident Management Team. He has a Bachelor's Degree in Forestry from Colorado State University and an MBA in Organizational Management from the University of Colorado. Tim spent 18 years on hotshot crews, including 12 as the Superintendent of the Pike IHC. He also worked as a Zone Fire Management Officer for the Bureau of Land Management and the Colorado State Forest Service.

Ralph Gonzales is the Fire and Fuels Program Leader with the US Forest Service's San Dimas Technology and Development Center. He earned a Bachelor of Science in Mechanical Engineering from UC Santa Barbara and a Master of

Science in Systems Management from the University of Southern California. In his 28 years of government service, he has served 18 years with the US Forest Service.

Jay Kurth is the Forest Fire Chief for the Eldorado National Forest and has been for the last three years. He has been in fire management for 29 years and has worked in positions on National Forests in California, Montana, Wyoming and the Black Hills of South Dakota. Jay was a hotshot for 19 years on three different crews with five years as a crew Superintendent. He also worked as a Zone Fire Management Officer for six years.

Robert Manwaring began working as a wildland firefighter in 1994. He was a hotshot crew foreman in California before he went to the Forest Service's San Dimas Technology and Development Center where he is a Fire Equipment Specialist.

Brad Mayhew, Human Performance Specialist and Investigation Process Consultant for Fireline Factors Consulting, has a M.S. in Human Factors and System Safety and has served as a wildland firefighter with the U.S. Forest Service Los Padres Hotshots. He helped author the Human Factors pages in the Incident Response Pocket Guide, and his work has appeared in the annual Refresher Videos and FireRescue Magazine. He is a recipient of the National Wildfire Coordinating Group Leadership Committee's "Paul Gleason Lead by Example Award" for Innovation.

Randy Okon is a Captain with the Missoula Fire Department. He began his fire service career in 1993 as a seasonal firefighter with the Montana Department of Natural Resources and Conservation. From there, he worked for the Forest Service on the Kootenai and Angeles National Forests, serving both on engines and hand crews. He was hired by the Missoula Fire Department in 1997, serving in Operations and with the Department's Fire Prevention Bureau where he specialized in wildfire prevention and investigation. His emphasis is in wildland fire. He serves as a member of the Fire Department's Wildland Division Leadership Team and is responsible for outside training, wildland qualifications, and serves as the Department liaison for wildland fire. He is NWCG-qualified as a Division/Group Supervisor and Incident Commander Type 3. He is a regular instructor with the Zone and Geographic area training centers.

Tony Petrilli is an equipment specialist for the Fire and Aviation Program at the US Forest Service Missoula Technology and Development Center (MTDC). He has

a bachelor's degree in education from Western Montana College. Tony began working for the Forest Service in 1982. In 1992 he began working wintertime details at MTDC; he then joined the Center full time in 2000. He has been the fire shelter and firefighter clothing project leader since 2005. Tony has worked as a firefighter for the Lewis and Clark and the Beaverhead National Forests and as a smokejumper for the Northern Region. He is qualified as a Division/Group Supervisor and Incident Commander Type III and has served on more than 20 fire entrapment review or investigation teams.

John Phipps is currently Senior Advisor, State & Private Forestry, in the US Forest Service. John has worked 38 years in the USFS and has previously served as Associate Deputy Chief, State & Private Forestry; Deputy Regional Forester; Forest Supervisor and District Ranger. Throughout John's career, he has been actively involved in the fire militia, prescribed fire, fire risk management and the agency's safety program. He has also served in numerous fire Agency Administrator assignments. John earned BS and MS degrees in Forestry from the University of Washington.

Jimmie Rocha has been the superintendent of the Rio Bravo Interagency Hotshot Crew (Kern County Fire Department, California) for ten years. Prior to that, he was the crew's foreman for five years. During his 29 years of fighting fire, he gained experience on engine, helicopter, and hand crews, as well as with the Kern County Heavy Equipment Program. He has worked for the Bureau of Land Management and the US Forest Service.

J. Brent Wachter has served as an Albuquerque New Mexico National Weather Service Incident Meteorologist (IMET) for 12 years. His incident work has included over 50 assignments spanning multiple fuel types, jurisdictions and states. He has also worked abroad and has served as a fire weather meteorologist for the Victoria, Australia Bureau of Meteorology during a portion their 2007 and 2009 fire seasons, including Black Saturday. He has also been an active trainer and curriculum developer for the IMET program and several federal and state agencies. Brent currently serves as a fire weather special operations committee member for the National Weather Association. Prior to becoming an IMET, he was an agricultural weather forecaster for a private company in Maryland and received his atmospheric science degree from the University of Wisconsin-Madison.

Richa Wilson served as documentation specialist on two firefighter fatality investigations prior to the Yarnell Hill investigation. A historian with the US

Forest Service, she manages the Intermountain Region's history collection and has broad experience in historic research and report writing for various entities including the City of Blantyre (Malawi) and Habitat for Humanity. She earned an M.S. in historic preservation from the University of Oregon where she was the first recipient of the first Elisabeth Walton Potter Historic Preservation Research Award.

Jennifer Ziegler earned a Ph.D. in Organizational Communication from the University of Colorado at Boulder. She is currently Associate Professor and Graduate Program Director in the Department of Communication at Valparaiso University. Her research specialty is in organizational communication and culture with a specific emphasis in wildland fire safety. A published author in communication and leadership journals, Dr. Ziegler has given invited talks at many wildland fire conferences and workshops. She is currently collaborating with US Forest Service researchers in Human Factors and Risk Management to improve learning from reviews of escaped prescribed fires.

Tom Zimmerman, an independent expert, served for 33 years with multiple agencies including the BLM, National Park Service, and US Forest Service. He was involved in training, program management, policy development, technology transfer, use of wildland fire, prescribed fire, wildfire and emergency incident management, fire ecology, fire behavior, long-term risk assessment, decision support, and other field operational activities. Tom has over 30 years of involvement in incident management team operations and served as an Incident Commander and Area Commander on wildland fire, prescribed natural fire, and wildland fire use events. He has a B.S. in Forestry from the University of Montana, an M.S. in Forestry/Fire Ecology from the University of Idaho, and a Ph.D. in Forest Fire Science from Colorado State University.

SUPPORT TEAM

Robert Kuhn is the Fire and Aviation Management specialist for the US Forest Service's headquarters. Since 1973, he has held many wildland fire positions at various levels of the organization, including Firefighter, Engine Captain, Dispatcher, Airtanker Base Manager, Interagency Aviation Center Manager, National Airtanker Base Program Manager, Washington Office Aviation Specialist, Regional Fire Management Deputy Director and Acting National Aviation Officer. Robert has served as pilot in command or on the flight crew for many of the Forest Service's smokejumper, tactical and administrative aircraft

in addition to holding ground firefighting and supervisory positions. Robert often leads post-accident review and audit teams, and serves as the aviation specialist on serious accident investigation teams. He maintains fire qualifications, and in 2013 is serving as the Aviation Technical Specialist on an Area Command Team.

Yarnell Hill Fact Sheets

INTERAGENCY HOTSHOT CREWS (IHCs) GENERAL INFORMATION

- A hotshot crew is a nationally available, intensively trained twenty-person hand crew primarily in hand line construction.
- Hotshot crews must meet the minimum standards and in compliance with the certification process found in the [“Standards for Interagency Hotshot Crew Operations”](#) document. Source: [NWCG Glossary of Wildland Fire Terminology](#)
- Interagency Hotshot Crews (IHCs) are a national shared resource, statused and assigned through the National Interagency Coordination Center at the National Interagency Fire Center in Boise, Idaho. Source: [Standards for Interagency Hotshot Crew Operations, 2/14/11](#)
- There are approximately 110 IHCs. Of those, approximately 85 are U.S. Forest Service IHCs; 20 are U.S. Department of the Interior IHCs; 2 are state IHCs; and 3 are local IHCs (including the Granite Mountain IHC). Source: http://www.fs.fed.us/fire/people/hotshots/IHC_index.html
- Locally hosted IHCs include the Kern County Fire Department in Lake Isabella, CA has the Rio Bravo IHC; the Northwest Fire Rescue District in Tucson, AZ has the Ironwood IHC; and the Prescott Fire Department in Prescott, AZ has the Granite Mountain IHC. Source: http://www.fs.fed.us/fire/people/hotshots/IHC_index.html
- State hosted IHCs Utah State Division of Forestry has the Lone Peak IHC in Draper, UT and the State of Alaska has the Pioneer Peak IHC in Palmer, AK. Source: http://www.fs.fed.us/fire/people/hotshots/IHC_index.html

IHC TRAINING AND QUALIFICATIONS

- For mobilization to an incident, IHCs will at a minimum have 18 fireline-qualified personnel for assignment; have 80% of the crew members with at least one previous season of fire experience; have permanently assigned leadership; and meet all other minimum IHC mobilization standards. Source: [Standards for Interagency Hotshot Crew Operations, 2/14/11](#)
- IHCs must maintain a minimum of seven permanent/career positions. Non-federal IHCs will meet the retention and qualification intent of this standard using equivalent employment authority within their sponsor agency human resource policy and the sponsor [Geographic Area Coordinating Group](#).

- The primary mission of IHCs is wildland fire operations. However, they can also work on all hazard incidents; provide a workforce to accomplish a variety of resource management objectives when not committed to fire assignments; and provide a high quality cadre for fire management training at local, geographic area, and national levels. Source: [Standards for Interagency Hotshot Crew Operations, 2/14/11](#)
- IHCs subscribe to a Code of Ethics to guide them in their practice as wildland fire professionals. Source: [Standards for Interagency Hotshot Crew Operations, 2/14/11](#)
- The 20 people on an IHC don't always work together. In fact IHCs are required to have the ability to break down into a minimum of three squads for initial attack and other independent operations. Source: [Standards for Interagency Hotshot Crew Operations, 2/14/11](#).
- All IHC members – federal, state, and city and including the Granite Mountain Interagency Hotshot Crew – must meet the qualification and experience requirements outlined in the [“Standards for Interagency Hotshot Crew Operations”](#) document.
- The Superintendent is a permanent employee with administrative and supervisory skills to conduct training and sufficient fire experience to provide capable leadership to the crew.
- The superintendent is responsible for all hotshot crew program management activities including certification that the crew is available for incident assignment.
- A superintendent must, at a minimum, be red carded as a Task Force Leader, Incident Commander Type 4, and Firing Boss. Source: [Standards for Interagency Hotshot Crew Operations, 2/14/11](#)
- Within the IHC there are a minimum of two senior firefighters that are career positions. At a minimum they must be red carded as Advanced Firefighter/Squad Boss (FFT1). At a minimum, crew members must be red carded as Firefighter (FFT2).
- Hotshot crew members are trained in fire suppression tactics; the use of fire suppression tools; fire behavior; decision making and leadership; wildland fire behavior; and the incident command system.
- Hotshot crews have different positions, including firefighter/crew member (FFT2); senior firefighter (FFT1); Squad Boss/Leader (ICT5); Assistant Superintendent or Captain (STCR, ICT4); and Superintendent (TFLD, ICT4, FIRB).
- All crew members must, at a minimum (FFT2) be trained in the Incident Command System (I-100), Human Factors in the Wildland Fire Service (L-180), Firefighter Training (S-130) , and Introduction to Wildland Fire

Behavior (S-190). Source: [Standards for Interagency Hotshot Crew Operations, 2/14/11](#)

- All IHC personnel must also receive annually 40 hours of operational preparedness training, consisting of classroom and field exercises that includes fireline refresher, applicable OSHA required safety training, firefighter safety, first aid, and crew operating procedures.
- All IHC personnel must meet the sponsor agency's current Work Capacity Test fitness standard for fireline personnel. As part of the training program for IHCs, all crew personnel will be required to participate in a minimum of 1 hour of fitness training, 5 days a week, during unassigned periods.
- The minimum requirements for leadership staffing, outlined on p. 6 of the "[Standards for Interagency Hotshot Crew Operations](#)" document, revised 2/14/11, must be met for a crew to be mobilized as a Type 1 IHC. The need for IHCs to meet minimum requirements to be mobilized as a Type 1 crew is reiterated in the "Decertification" section on p. 13.
- If at any time an IHC fails to meet the required red card qualifications or the superintendent feels their crew is not meeting the intent of the "[Standards for Interagency Hotshot Crew Operations](#)" it is incumbent upon the crew superintendent to re-status the crew. The IHC will be re-statused per crew typing in the [Minimum Crew Standards for National Mobilization](#).
- The superintendent is responsible for informing the first line supervisor, agency administrator and the local GACC of any required changes in the crews typing.

IHC BILLING AND REIMBURSEMENT AND DAYS OFF

- Reimbursement for use of an agency's crew on a wildfire is based on what the agency providing the crew bills the agency with jurisdiction over the wildfire.
- Billing for AZ is standard rate of \$39.50/hr. per person, no matter who is on the crew.
- Detailed information about the interagency Work/Rest, Length of Assignment, and Days off standards can be found in the [National Interagency Mobilization Guide](#).

FIRE SHELTER

- Shaped like a half-cylinder with rounded ends (older versions were triangular prism-shaped like small one person tents), the [fire shelter](#) is required to be carried by all wildland firefighters. Fire shelters should be used as a last resort, when firefighters believe it is needed for entrapment situations.
- Wildland firefighters have carried fire shelters since they were developed during the 1960s. The fire shelter is credited with saving more than 300 lives and preventing hundreds of burn injuries.
- The fire shelter is a portable refuge that offers protection by reflecting radiant heat and providing a volume of breathable air during a fire entrapment situation. Convective heat and direct flame contact can lessen the protective capabilities of the shelter.
- Fire shelters are deployed in entrapment situations where firefighters feel they need to use it to prevent possible burn injury or death. Shelter deployment training stresses that firefighters deploy shelters in the largest possible area that is free of fuels. Optimal deployment sites include large rock slides, gravel or paved roads (maintaining awareness of vehicles), areas cleared to bare mineral soil by mechanical equipment such as dozers, previously burned or “black” areas, or firefighter-cleared areas.
- Places to avoid for deployment include areas where shelters can be exposed to direct flame contact or convective heat such as narrow ravines (“chimneys”), steep slopes, draws and saddles.
- Sites where rocks, logs, or standing dead trees (snags) can roll or fall onto shelters should be avoided if possible. Flammable equipment (such as fuses and chainsaw fuel) should be left outside and away from the shelter.
- To deploy the shelter, firefighters remove the shelter from its protective clear PVC bag, unfold and “shake out” the shelter, and get inside. Firefighters lay stomach-down on the shelter floor and slip their arms through the hold down straps with their feet toward the advancing fire.
- The fire shelter provides protection primarily by reflecting radiant heat and trapping breathable air inside.
- The shelter has two layers. The outer layer is aluminum foil bonded to woven silica cloth. The foil reflects radiant heat and the silica cloth slows the transfer of heat to the inside of the shelter. An inner layer of aluminum foil laminated to fiberglass prevents heat from reradiating to the inside. The air gap between the layers offers further insulation.

- Fire shelters are enclosed in a carrying case, worn on a belt, chest harness or as a component of the firefighter's fireline pack. A regular sized fire shelter weighs 4.2 lbs. and the carrying case is approximately 9 x 5¾ x 4½ inches.
- The original shelter was designed to reflect radiant heat, however direct flame contact could cause damage. Some fatalities occurred when flame contact was severe.
- Development of the new generation fire shelter began in 2000. A worldwide material search was conducted. Small and full scale tests were developed to measure the strength, durability, flammability, thermal performance, and toxicity of various shelter designs and materials.
- Over 60 materials and combinations of materials were considered and 17 full scale designs were tested.
- The final shelter design was selected in 2002. Introduced in 2003, the new generation fire shelter provides improved protection from radiant and convective heat. As part of the continuous improvement process, products and materials undergo review and testing.
- The greatest threats a firefighter faces during an entrapment situation are burns to the body and inhalation of hot gases, which can cause asphyxiation. Scientific estimates of the maximum survivable air temperature vary, but dry air temperatures as high as 300°F are considered survivable for short periods of time.
- There are physical limits to all materials. Although the current fire shelter offers significantly more protection than the old-style shelter, it cannot protect firefighters in all circumstances. Chances of survival improve if the fire shelter is deployed where it is not exposed to direct flame.
- A firefighter's highest priority is to avoid situations that can lead to entrapment.
- Appropriate training includes, at a minimum, reviewing the training pamphlet, viewing the fire shelter training video, and practicing deployments using a practice fire shelter.

AVIATION

- Overall, in 2013 there have been 19 Airtankers available for wildfire suppression nationwide, including:
 - 2 Airtankers available through Next Generation Exclusive Use contracts
 - 9 Airtankers available through Legacy Exclusive Use Contracts

- 8 military C-130s equipped with Modular Airborne Fire Fighting Systems (MAFFS)
- There has also been up to 8 CV-580 Convairs available through agreements with the State of Alaska and the Canadian Interagency Forest Fire Centre; 2 CL-215 Water Scoopers through shared U.S. Department of the Interior/U.S. Forest Service Exclusive Use contracts and 1 CL-415 Water Scooper through a U.S. Forest Service Exclusive Use contract; and 1 Single Engine Airtanker (SEAT) through a shared Bureau of Land Management/U.S. Forest Service Exclusive Use contract.
- In addition, in 2013, the feds have had the ability to mobilize more than 100 helicopters. This includes:
 - 32 heavy, 33 medium, and 59 light helicopters on Exclusive Use contracts
 - Up to 57 heavy, 78 medium, and 171 light helicopters on Call When Needed contracts
- The US Forest Service submitted a Large Airtanker Modernization Strategy to Congress in February, 2012. This submittal identified the need for 18 to 28 modern Large Airtankers.
- The Forest Service awarded contracts to vendors (June 2013) to provide seven “Next Generation Airtankers.” Two Next Generation Airtankers (DC-10s) flew wildfire suppression missions through these contracts this summer. Work is continuing with the other four vendors to bring their Next Generation Airtankers into service as soon as possible.
- On any given day, there will never be enough aircraft to assign to every single fire. Assets are assigned to wildfires through a careful prioritization process where the most significant fires get the most critical assets first. Requests for assets from incidents are met as quickly as possible.

RADIO COMMUNICATIONS

Source: [Interagency Standards for Fire and Aviation Operations, Chapter 15](#)

- Radio communications provide for the flow of tactical information needed for the command/control of personnel and resources.
- IHCs will provide a minimum of five programmable multi-channel radios per crew.
- Air-to-air or ground-to-air communications on incidents have pre-assigned frequencies.

- Frequencies for Type 1 and Type 2 incidents are assigned through the National Interagency Communications Division located at the National Interagency Fire Center.

SENSEMAKING

- A goal of any SAI Team is to attempt to reconstruct the context in which a person or crew was operating, while trying to avoid oversimplifying and judging actions in hindsight. Instead, the aim of any SAI is to understand how people, crews and others on the fire made sense of their situation at the times when they took the critical actions.
- Sensemaking refers to how people select what seems important to attend to, and how this influences their actions. People cannot possibly cope with all of the raw data and information coming at them at a given moment. Instead, what a person pays attention to is a function of identity, past experience, their understanding of their purpose, and other factors. Sensemaking is a very active process whereby people literally “make sense” of the world around them at each moment.
- People engage in sensemaking both individually and collectively. In fire, the term situational awareness describes sensemaking: how comprehensively and how accurately are you making sense of the actual fire environment you are working in? Collective sensemaking is about communication: it is about how crews, IMTs, and host agencies determine potential strategies and tactics, and how they convey and update these during planning meetings, briefings, operations, debriefings, and in after action reviews.
- Effective risk management communication involves more than simply reporting and transmitting messages. It requires developing effective shared meaning together through dialogue and inquiry. This discussion will frequently return to the concept of collective sensemaking and the role of inquiry in that process.
- Sensemaking is social and ongoing. The SAI report works toward introducing issues and questions to readers that may be useful for discussion points among colleagues, as they try to understand an accident and learn from it.

SERIOUS ACCIDENT INVESTIGATION (SAI)

- The primary goal of an SAI report is to tell the story of what occurred and facilitate learning, in order to reduce the likelihood of future accidents.
- Report formats have varied based on the circumstances of the accident and latest developments in progressive learning and thinking when responding to tragedies. One way is in two sections or parts, plus appendices. Part One includes the fact-based Narrative, the Analysis, Conclusions, and Recommendations. Part Two, the Learning Discussion section, explores multiple concepts and perspectives that may help readers to understand and learn from this accident. No other reports are produced.
- Incident Command position titles are used in place of names because of privacy requirements.
- This process does not identify causes in the traditional sense of pointing out errors, mistakes, and violations but approaches the accident from the perspective that risk is inherent in firefighting.
- The SAI process tries to minimize the common human trait of hindsight bias, which is often associated with traditional accident reviews and investigations. The term “hindsight bias” refers to the tendency people have to view past events as more predictable than they really were before the events took place. After an event occurs, people often believe they could have predicted the outcome of the event before it actually happened.
- Investigation Teams begin with the philosophy that firefighters are expected and empowered to be resourceful and decisive, to exercise initiative and accept responsibility, and to use their training, experience and judgment in their decision-making.
- The wildland fire community uses a doctrine approach to fire suppression, which requires the use of judgment. An individual’s judgment in a given situation depends upon their unique training and experiences.
- The 10 Standard Firefighting Orders and 18 Watch Out Situations (10 and 18) are the foundation of training in fire suppression operations, but they require judgment in application. These principles, as stated below, outline the Team’s perspective regarding the use and consideration of the 10 and 18 in this report:

Principles of Suppression Operations Source: [Interagency Standards for Fire and Fire Aviation Operations](#)

- “The primary means by which we implement command decisions and maintain unity of action is through the use of common principles of suppression operations. These principles guide our fundamental fire suppression practices, behaviors, and customs, and are mutually understood at every level of command. They include Risk Management, Standard Firefighting Orders and Watch Out Situations, LCES [Lookouts, Communications, Escape Routes, and Safety Zones], and the Downhill Line Construction Checklist. These principles are fundamental to how we perform fire suppression operations and are intended to improve decision making and firefighter safety. They are not absolute rules. They require judgment in application.”

In light of this doctrine, SAI Teams attempt to use foresight rather than hindsight. That is, the Team tries to stand with the crew to try to understand, as best they could, what crewmembers were seeing and how they were making sense of unfolding conditions, when it was time to act. The Team also looks at broader cultural factors that may influence a crew. This helps set the stage for ongoing learning.

High Resolution Maps

- [Page ii Yarnell Hill Fire July 3, 2013 Infrared Heat Perimeter Map](#)
- [Page 20 Yarnell Hill Southern Portion Figure 7](#)
- [Page 32 Granite Mountain Hotshot IHC approximate movement 1604-1640](#)

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